REMARKS

Claims 1-7, 9-13, 15-21, 23-29, 31-51 and 53-54 are currently pending in this application, as amended. Claims 8, 14, 22 and 30 have been canceled. Claims 1, 15, 28, 31, 38, 41 and 53-54 have been amended to more particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. Support for the claim amendments can be found in at least the original claims and the original Specification at page 10, line 25 – page 12, line 20. Claims 1-2, 15-21, 23-29, 31-42, 44-51 and 53-54 have been amended to correct minor grammatical problems. Accordingly, no new matter has been added.

Telephone Interview

The Applicants wish to thank the Examiner for the courtesy of a telephone interview on September 9, 2003. During the telephone interview, the Applicants' undersigned agent discussed claim 1 with reference to Fig. 3 of the present application. In particular, the Applicants' agent discussed the reasons why WO 96/27896 ("Lang") modified by either U.S. Pat. No. 6,084,250 ("Jüstel *et al.*," hereinafter, "Jüstel") or U.S. Pat. No. 6,069,440 ("Shimizu *et al.*," hereinafter, "Shimizu") would still not yield the Applicants' invention as set forth in independent claim 1. Specifically, the problem Lang was solving was the need for external filters on incandescent light bulbs for use with night vision equipment. Lang's solution was to integrally make the red wavelength filter part of the glass envelope and bead (bulb) that surrounds the incandescent lighting element. Therefore, if one were to combine the white LED's of Jüstel or Shimizu, the result would be a white LED surrounded by a glass envelope and bead having an integral red wavelengths filter (i.e., filtered above about 640 nanometers as shown in Fig. 12 of Lang). The Examiner and the Examiner's supervisor agreed that Lang does not include a light source that is not filtered in the red wavelengths. The Examiner and the Examiner's supervisor agreed to reconsider the patentability of the claim.

On September 12, 2003, the Examiner called and stated that after the interview, the Examiner and the Examiner's supervisor considered the arguments but decided to maintain the rejection because (i) the "not filtered language" is functional language, (ii) "not filtered" is a negative limitation and (iii) the Examiner believes that it is permissible to substitute the output

graph of Lang (Fig. 12) with the output graph of Shimizu (Fig. 4) ignoring the filtered glass of Lang. The Examiner's stated position was that it is well known to reduce emissions in the red wavelengths when using night vision equipment; so, the Examiner using this well known information proposes to completely replace the light source with integrally filtered glass envelope and bead of Lang with the unfiltered white LED of Shimizu, regardless of the teachings of Lang as a whole. Applicants' agent objected to the impermissible combination proposed by the Examiner and noted that negative claim limitations are permissible as discussed in MPEP 2173.05(i). The Examiner agreed with the negative claim limitations.

In order to move forward, Applicants' agent requested permission to fax the Examiner a proposed amendment to claim 1 to at least determine if the Examiner would find the amended version to structurally include the "not filtered" language. The Examiner agreed to discuss such a proposed amendment. A proposed Amendment was faxed to the Examiner on September 15, 2003. On September 23, 2003, the Examiner was able to confer with his supervisor and advised that they found the proposed amendment to still be functional.

The Examiner's Interview Summary (PTOL-413), mailed October 15, 2003, in the continuation sheet indicates that, *inter alia*:

> In addition, during brief interview during September 29, 2003, examiner further explained the reasons for combining references Lang in view of Shimizu *et al.*, which are means for producing desired spectral radiation of Lang, both incandescent light bulb and the filter, is combined with teachings of Shimizu *et al.* achieving a desired spectral radiance utilizing LED alone, therefore it would have been obvious to substitute means of incandescent bulb and filter with LED. Following reasons does not destroy the invention of Lang. Therefore, 35 U.S.C. § 103(a) rejections are proper. Also, claim 1 recites negative and functional limitations of "the lighting means do no disturb the light intensifier night vision imaging system even if the white light-emitting source is not filtered in the red wavelengths" where it has not been given patentable weight..."

In response to the Examiner's comments, the Applicants (i) have amended the independent claims to more positively recite the "not filtered in the red wavelengths" as a structural limitation, (ii) traverse the Examiner's combination of Lang and Shimizu, and (iii) note that the Examiner's characterization of the negative limitation is irrelevant to patentability.

Claim Rejections Under 35 U.S.C. § 103(a)

Rejection – Claims 1-7, 10-13, 34-40, 43, 47-48, 50 and 53-54

Claims 1-7, 10-13, 34-40, 43, 47-48, 50 and 53-54 have been rejected under 35 U.S.C. § 103(a) as being obvious over Lang in view of either Bill Schweber or Jüstel or Shimizu. The Examiner takes the position that Lang discloses lighting means including a white light-emitting panel which emits a polychromatic with light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band, the lighting means do not disturb the light intensifier night vision imaging system even if the white light-emitting source is not filtered in the red wavelengths. The Examiner states that Lang discloses the claimed invention except for the white light-emitting diode, but that any of Schweber or Jüstel or Shimizu teaches a white light-emitting diode or white LED(s). It is the Examiner's position that it would have been obvious to modify well known incandescent lamps or bulbs with well known white LED(s). The Examiner also takes "Official Notice" of equivalence of incandescent lamps or bulbs and white LED(s) for their use in general illumination purposes and that the selection of any of these "known equivalents" would be within the level of ordinary skill in the art. It is further the Examiner's position that it would have been obvious to modify Lang to include white LED(s) with phosphorus coatings for desired frequency outputs.

Withdrawal of the rejection of claims 1-7, 10-13, 34-40, 43, 47-48, 50 and 53-54 is respectfully requested in view of the foregoing amendments.

Present Invention

The present invention is directed to a combination of lighting means and of a light intensifier night imaging vision system. The lighting means comprise a white light-emitting source that is not filtered in the red wavelengths. The light-emitting source includes at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band. The lighting means are configured not to disturb the light intensifier night

vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

The present invention is also directed to a method to illuminate an aircraft instrument panel or an element in a pilot's field of vision when the pilot uses a light intensifier night vision imaging system. The method includes using, as illumination means, a white light-emitting source that is not filtered in the red wavelengths. The white light-emitting source includes at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band. The illumination means are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

The present invention is also directed to a method for retrofitting a system of position lights, landing lights, anti-collision lights or flight training lights comprising incandescent lamps, so that the system is compatible with a light intensifier night vision imaging system. The method includes replacing each incandescent lamp with a plurality of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band. The plurality of white light-emitting diodes is configured not to disturb the light intensifier night vision imaging system when the plurality of white light-emitting diodes is not filtered in the red wavelengths.

The present invention is also directed to lighting means for aircraft cockpit or instrument panel, compatible with a light intensifier night vision imaging system. The lighting means include a ramp of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band. The ramp of white light-emitting diodes is configured not to disturb the light intensifier night vision imaging system when the ramp of white light-emitting diodes is not filtered in the red wavelengths.

The present invention is also directed to a lighting system including means of lighting in the visible range, means of lighting in the infrared range and switching means to make a choice between a lighting position in the visible range and a lighting position in the infrared range. The means of lighting in the visible range include at least one white light-emitting diode that is not filter in the red wavelengths and that emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band. The means of lighting in the visible range being configured not to disturb the light intensifier night vision imaging system when the at least one white light-emitting diode is not filtered in the red wavelengths.

Lang

Lang discloses an incandescent lamp or lightbulb that is used with night vision equipment. As noted at page 2, lines 24-27, the lightbulb of Lang is "sealed in a colored glass envelope that transmits light energy substantially only in that portion of the spectrum not detected by night vision equipment." The lightbulb has a colored glass envelope 22 (used in the preferred embodiments – depicted in green in attached APPENDIX-i) that has no detectable transmission of light above approximately 640 nm, the peak of transmission being in the 530-550 nm range (i.e., the lightbulb is filtered in the red wavelengths by the tinted glass). (Lang page 5, lines 15-24). The incandescent filament 26 provides the source of white light that is then filtered by the envelope 22 (depicted in yellow in the attached APPENDIX-i).

Fig. 12 a curve shows the spectral radiance of the lightbulb on a logarithmic scale having a peak amplitude of 100% around the aviation green wavelength (555 nm) while the radiation of the blue violet/blue (~400-480 nm) comprises about 0.2-10% of the spectral radiance. (see APPENDIX-ii). At page 5, lines 6-11, Lang notes that "green light, green-blue light or amber light with no substantial component above 700 nm is usually preferred for use in conjunction with night vision equipment, with green light presently being preferred in accordance with the present invention." Table 1 on page 6 demonstrates that NVIS Green passes (i.e., "NVIS GREEN A: PASS").

Thus, Lang discloses a *filtered* lightbulb wherein the filter is the glass bulb which is part of the lightbulb. The entire thrust of the invention of Lang is the elimination of an external filter by making the filter part of the integrally formed glass envelope or bulb which surrounds the incandescent filament of an incandescent lamp.

Schweber

The present application, Application No. 09/636,565, filed on August 10, 2000 is a continuation of International Application No. PCT/FR99/00423, filed February 24, 1999. PCT International Application No. PCT/FR99/00423 and the present application claim foreign priority from French Application No. FR98 02310, filed on February 24, 1998. A certified copy of French Application No. 98 02310 was filed with the present application. **Thus, the present application has an effective filing date of *at least* February 24, 1999** (see 35 U.S.C. §§ 120, 363 and 365(c) and 37 C.F.R. § 1.53(b)).

35 U.S.C. § 102(a) recites, in pertinent part:

> (a) the invention was... described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent

35 U.S.C. § 102(b) recites, in pertinent part:

> (b) the invention was... described in a printed publication in this or a foreign country... more than one year prior to the date of the application for patent in the United States

35 U.S.C. § 102 (e) recites, in pertinent part:

> (e) The invention was described in....
>
> (2) A patent granted on an application for patent by another filed in the United States before the invention by the Applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on

> the filing of an international application filed under the treaty defined in § 351(a)....[*emphasis added*]

The article by Bill Schweber was published August 2, 2001. The article is not a U.S. Patent or Patent Application Publication. Accordingly, the Schweber article was not published before the effective filing date of the present application (i.e., at least February 24, 1999), and therefore, was also not possibly filed before the date of invention by the Applicants. **Accordingly, Schweber does not quality as prior art under 35 U.S.C. § 102(a), (b) or (e), and therefore, Schweber also does not qualify as prior art under 35 U.S.C. § 103(a).**

Jüstel

Jüstel discloses a light-emitting device having a UV-diode as the excitation source for the UV-radiation and a phosphor layer, including a mixture of three phosphors, which convert the UV-light of the UV-diode into visible, white light. The device is configured so that the UV-diode is embedded in a semi-spherical bowl of a polymeric material, which is arranged on a transparent substrate (front panel) 1. The three phosphor powders 2 are finely distributed in the polymer 3. The polymer bowl and the phosphor powders together constitute the phosphor layer. The device in accordance with the invention may further comprise mirrors 4 for UV and visible light to improve the decoupling of light. The light-emitting device comprises a UV-diode with a primary emission of 300 nm $\leq \lambda \leq$ 370 nm and a phosphor layer including a combination of a blue-emitting phosphor having an emission band, with $430 \leq \lambda \leq 490$ nm, a green-emitting phosphor having an emission band, with 520 nm $\leq \lambda \leq$ 570 nm and a red-emitting phosphor having an emission band, with 590 nm$\leq \lambda \leq$ 630 nm, emits high-quality white light. The color-rendering index CRI is approximately 90 at a color temperature of 4000 K. The color rendition depends only on the composition of the three phosphors, not on the relation between converted and non-converted light, and hence can be readily controlled and regulated.

Shimizu

Shimizu discloses a white light emitting diode including a light emitting component using a semiconductor as a light emitting layer and a phosphor which absorbs a part

of light emitted by the light emitting component and emits light of wavelength different from that of the absorbed light. The light emitting layer of the light emitting component is a nitride compound semiconductor and the phosphor contains garnet fluorescent material activated with cerium which contains at least one element selected from the group consisting of Y, Lu, Sc, La, Gd and Sm, and at least one element selected from the group consisting of Al, Ga and In, and is subject to less deterioration of emission characteristic even when used with high luminance for a long period of time. Light emitted by a light emitting component (LED) is usually emitted through an electrode which supplies electric power to the light emitting component. Emitted light is partly blocked by the electrode formed on the light emitting component resulting in a particular emission pattern, and is therefore not emitted uniformly in every direction. An LED which contains the fluorescent material, however, can emit light uniformly over a wide range without forming undesirable emission pattern because the light is emitted after being diffused by the fluorescent material. Although light emitted by the light emitting component (LED) has a monochromatic peak, the peak is broad and has high color rendering property. This characteristic makes an indispensable advantage for an application which requires wavelengths of a relatively wide range.

Patentability of Claim 1

Claim 1, as amended, recites:

> A combination of lighting means and of a light intensifier night imaging vision system,
>
> the lighting means comprise a white light-emitting source that is not filtered in the red wavelengths, the light-emitting source including at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band,
>
> the lighting means being configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

Lang fails to disclose, teach or suggest a white light-emitting source that is not filtered in the red wavelengths, the light-emitting source including at least a white light-emitting

diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band, and that the lighting means are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The light source of Lang is the incandescent lamp within the colored glass bulb. Lang suggests that this is done without external filters because the filter is integral within the glass of the bulb itself. With reference to APPENDIX-i, Fig. 2 of Lang shows that the white light source (filament 26 colored yellow) is combined with the integral filter (colored green). The invention of Lang *was* making the filter integral with the envelope or bulb.

In order to establish *prima facie* obviousness of a claimed invention, all the claimed limitations must be taught or suggested by the prior art. MPEP § 2143.03.

Lang does not disclose, teach or suggest a white light-emitting source comprising at least a white light-emitting diode or a white light-emitting panel which emits a polychromatic white light that does not disturb the light intensifier night vision imaging system even if the white light-emitting source is not filtered in the red wavelengths, as claimed in claim 1. Thus Lang does not disclose all of the claimed limitations of claim 1.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. MPEP § 2143.03.

Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

Further, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. MPEP § 2143.01.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner.

But, even if Lang were modified to include the white LEDs of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum.

The Examiner's assertion that the invention of Lang would not be destroyed by replacing the entire incandescent element and integral filtered envelope with just the white LED of either Shimizu or Jüstel, ignores a complete reading of the invention of Lang. Replacing the incandescent element and integral filtered envelope of Lang in its entirety, as suggested by the Examiner, would require a change in the basic principal under which the Lang construction was designed to operate, and is therefore impermissible as set forth in MPEP § 2143.01. Both embodiments of Lang (Figs. 1-3 and 6-11) focus on the formation of the integrally formed filtering glass envelope which was invented to eliminate the need for external filters.

Furthermore, the present invention as set forth in claim 1, and the other independent claims for that matter, is completely contrary to understandings and expectations of the art. As discussed in Lang, the glass has "no detectable transmission of light above approximately 640 nm" and "other glasses may still satisfy the principal requirement of the

present invention, namely no measurable light transmission above 700 nm," and "acceptable for use with state-of-the-art night vision equipment means no measurable light emission above 700 nanometers." Therefore, an artisan having the teachings of Lang and other filtered references (i.e., "aviator green" filters) would find a polychromatic white light source that is not filtered in the red wavelengths to be completely contrary to the understandings of the art with little expectation of success.

Thus, claim 1 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of independent claim 1 and of dependent claims 2-7, 10-13 and 43 should be withdrawn.

Patentability of Claim 34

Claim 34, as amended, recites:

> Lighting means for aircraft lights, compatible with a light intensifier night vision imaging system, especially for position lights, landing lights, anti-collision lights or flight training lights, comprising a plurality of white light-emitting diodes arranged on a printed circuit,
>
> the lighting means not being filtered in the red wavelengths and emitting polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band,
>
> the lighting means being configured not to disturb the light intensifier night vision imaging system when the lighting means are not filtered in the red wavelengths.

For the reasons similar to those set forth above regarding claim 1, Lang fails to disclose, teach or suggest lighting means not being filtered in the red wavelengths and emitting polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band and that the lighting means are configured not to disturb the light intensifier night vision imaging system when the lighting means are not filtered in the red wavelengths. Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths

(i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 34. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 34 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of independent claim 34 and of dependent claims 35-37, 47 and 50 should be withdrawn.

Patentability of Claim 38

Claim 38, as amended, recites:

> Lighting means for an aircraft cockpit or instrument panel, compatible with a light intensifier night vision imaging system, the lighting means comprising:
>
> a ramp of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band,
>
> the ramp of white light-emitting diodes being configured not to disturb the light intensifier night vision imaging system when the ramp of white light-emitting diodes is not filtered in the red wavelengths.

For the reasons similar to those set forth above regarding claim 1, Lang fails to disclose, teach or suggest a ramp of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band and that the ramp of white light-emitting diodes are configured not to disturb the light intensifier night vision imaging system when the ramp of white light-emitting diodes is not filtered in the red wavelengths. Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 38. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested

by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 38 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of independent claim 38 and of dependent claims 39, 40 and 48 should be withdrawn.

Patentability of Claim 53

Claim 53, as amended, recites, *inter alia*:

> at least one light-emitting source of polychromatic white light that is not filtered in the red wavelengths with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band, the at least one light-emitting source being configured not to disturb a light intensifier night vision imaging system when the at least one white light-emitting source is not filtered in the red wavelengths....

For the reasons similar to those set forth above regarding claim 1, Lang fails to disclose, teach or suggest at least one light-emitting source of polychromatic white light that is not filtered in the red wavelengths with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and that the at least one light-emitting source is configured not to disturb a light intensifier night vision imaging system when the at least one white light-emitting source is not filtered in the red wavelengths. Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 38. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored

glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 53 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of independent claim 53 should be withdrawn.

Patentability of Claim 54

Claim 54, as amended, recites, *inter alia*:

> at least one white light-emitting diode that is not filtered in the red wavelengths which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band, the at least one white light-emitting diode being configured not to disturb a light intensifier night vision imaging

> system when the white light-emitting diode is not filtered in the red wavelengths....

For the reasons similar to those set forth above regarding claim 1, Lang fails to disclose, teach or suggest at least one white light-emitting diode that is not filtered in the red wavelengths which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and that the at least one white light-emitting diode is configured not to disturb a light intensifier night vision imaging system when the white light-emitting diode is not filtered in the red wavelengths. Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 38. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang

wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 54 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 103(a) of independent claim 54 should be withdrawn.

Rejection – Claim 9

Claim 9 has been rejected under 35 U.S.C. § 103(a) as being obvious over Lang in view of either Schweber, Jüstel or Shimizu and further in view of U.S. Patent No. 4,779,942 ("Verney"). The Examiner takes the position that Lang in view of either Schweber, Jüstel or Shimizu discloses the invention except for the light-emitting source of white light giving light guidance in a translucent board of an instrument panel. Further, the Examiner states that Verney discloses teaches that the light-emitting source is utilized in an instrument panel.

Withdrawal of the rejection of claim 9 is respectfully requested in view of the foregoing amendments.

Verney

Verney discloses a night vision goggle (NVG) compatible red lighting in which the red light does not adversely affect the gain of the NVG's. The red light is made compatible for use with NVG's by using a filter over the source of light. The filter transmits about 80% or more of visible red light energy from about 360 nm to about 640 nm and inhibits the transmission of 99.9% of radiant energy within the goggle sensitive range about 720 nm. According to Verney, transmission of 80% or more of visible red light energy below about 640 nm provides adequate daylight readability, i.e., so the filtered red light can be viewed during the day without NVG's (see e.g., col. 4, lines 14-20). Further, transmission within the spectral range of the NVG's , i.e., 600 nm to 720 nm, allows the red light to be viewable through the NVG's. Verney notes though that adsorption of the remaining light energy above 720 nm is essential to prevent the loss of external viewing intensification of the NVG's. The filter or filtering medium is a combination of conventional interference coatings or adsorption dyes.

Patentability of Claim 9

Claim 9 is dependent upon allowable independent claim 1, as amended. For all of the reasons set forth above regarding claim 1, Lang in view of either Jüstel or Shimizu (Schweber is not prior art) fail, to disclose, teach or suggest a white light-emitting source that is not filtered in the red wavelengths, the light-emitting source including at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band, the lighting means being configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths. Verney fails to compensate for the deficiencies of the modified Lang device. In fact, Verney specifically teaches away from the present invention as set forth in claim 9 in that Verney discloses that red light is made compatible for use with NVG's by using a filter over the source of light and that the filter transmits about 80% or more of visible red light energy from about 360 nm to about 640 nm and inhibits the transmission of 99.9% of radiant energy within the goggle sensitive range about 720 nm. Thus, claim 9 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu and/or Verney. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) of claim 9 should be withdrawn.

Rejection of Claims 41-42, 49 and 51

Claims 41-42, 49 and 51 have been rejected under 35 U.S.C. § 103(a) as being obvious over Lang in view of either Schweber, Jüstel or Shimizu and further in view of U.S. Patent No. 5,083,246 ("Lambert"). Without acknowledging that Lang modified by Schweber, Jüstel or Shimizu does not disclose switching between lighting means in the infrared range and the visible range, the Examiner states that Lambert teaches means of lighting in the visible range, means of lighting in the infrared rang and switching means to make a choice between lighting in the visible range and lighting in the infrared range.

Withdrawal of the rejection of claims 41-42, 49 and 51 is respectfully requested in view of the foregoing amendments.

Lambert

Lambert discloses an apparatus for illuminating a portion of the cockpit of an aircraft utilizing a night vision imaging system. The illuminating device 20 comprises an elongate housing 22, an LED 24, batteries 26 and a Velcro looped strap for hooking onto a finger. The LED outputs a light color of green and specifically outputs a light frequency in the range of 562-567 nanometers so that the light will not "blow out the goggles." (col. 3, lines 20-32).

Patentability of claims 41-42, 49 and 51

Claim 41, recites, *inter alia*:

> means of lighting in the visible range including at least one white light-emitting diode that is not filter in the red wavelengths and that emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band, the means of lighting in the visible range being configured not to disturb the light intensifier night vision imaging system when the at least one white light-emitting diode is not filtered in the red wavelengths....

For the reasons similar to those set forth above regarding claim 1, Lang modified Jüstel or Shimizu (Schweber is not prior art) fails to disclose, teach or suggest at least one white light-emitting diode that is not filter in the red wavelengths and that emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band and that the means of lighting in the visible range being configured not to disturb the light intensifier night vision imaging system when the at least one white light-emitting diode is not filtered in the red wavelengths.

Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 41. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision

equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 41 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu.

Lambert fails to compensate for the deficiencies of the modified Lang device. Lambert discloses an apparatus for illuminating a portion of the cockpit of an aircraft utilizing a night vision imaging system having an LED that outputs a light color of green and specifically outputs a light frequency in the range of 562-567 nanometers so that the light will not "blow out the goggles." (col. 3, lines 20-32). Accordingly, modifying the modified Lang device with Lambert, as suggested by the Examiner, would result in white LED with an integral filter used to light up an aircraft instrument panel.

Thus, claim 41 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu and/or Lambert. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) of claim 41 and dependent claims 42, 49 and 51 should be withdrawn.

Rejection of Claims 15-29, 31-33 and 44-46

Claims 15-29, 31-33 and 44-46 have been rejected under 35 U.S.C. § 103(a) as being obvious over Lang in view of either Schweber, Jüstel or Shimizu and further in view of Lambert or Verney.

Withdrawal of the rejection of claims 15-29, 31-33 and 44-46 is respectfully requested in view of the foregoing amendments.

Patentability of claims 15-21, 23-27 and 44

Claim 15, recites, *inter alia*:

> using, as illumination means, a white light-emitting source that is not filtered in the red wavelengths, the white light-emitting source including at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band,
>
> the illumination means being configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

For the reasons similar to those set forth above regarding claim 1, Lang modified by Jüstel or Shimizu (Schweber is not prior art) fails to disclose, teach or suggest a white light-emitting source that is not filtered in the red wavelengths, that the white light-emitting source including at least a white light-emitting diode or a white light-emitting panel which emits polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and that the illumination means are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 15. Taken as a whole, Lang teaches making incandescent lamps or

bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 15 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu.

Lambert fails to compensate for the deficiencies of the modified Lang device. Lambert discloses an apparatus for illuminating a portion of the cockpit of an aircraft utilizing a night vision imaging system having an LED that outputs a light color of green and specifically outputs a light frequency in the range of 562-567 nanometers so that the light will not "blow out the goggles." (col. 3, lines 20-32). Accordingly, modifying the modified Lang device with Lambert, as suggested by the Examiner, would result in white LED with an integral filter used to light up an aircraft instrument panel.

Verney also fails to compensate for the deficiencies of the modified Lang device. In fact, Verney specifically teaches away from the present invention as set forth in claim 15 in that Verney discloses that red light is made compatible for use with NVG's by using a filter over the source of light and that the filter transmits about 80% or more of visible red light energy from about 360 nm to about 640 nm and inhibits the transmission of 99.9% of radiant energy within the goggle sensitive range about 720 nm.

Thus, claim 15 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu and/or Lambert and/or Verney. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) of claim 15 and dependent claims 16-21, 23-27 and 44 should be withdrawn.

Patentability of claims 28-29 and 45

Claim 28, recites, *inter alia*:

> replacing at least some of the incandescent lamps with white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band,
>
> the white-light-emitting diodes being configured not to disturb the light intensifier night vision imaging system when the white light-emitting diodes are not filtered in the red wavelengths.

For the reasons similar to those set forth above regarding claim 1, Lang modified by Jüstel or Shimizu (Schweber is not prior art) fails to disclose, teach or suggest replacing at least some of the incandescent lamps with white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band and that the white-light-emitting diodes are configured not to disturb the light intensifier night vision imaging system when the white light-emitting diodes are not filtered in the red wavelengths.

Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention

of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 28. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 28 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu.

Lambert fails to compensate for the deficiencies of the modified Lang device. Lambert discloses an apparatus for illuminating a portion of the cockpit of an aircraft utilizing a night vision imaging system having an LED that outputs a light color of green and specifically outputs a light frequency in the range of 562-567 nanometers so that the light will not "blow out the goggles." (col. 3, lines 20-32). Accordingly, modifying the modified Lang device with

Lambert, as suggested by the Examiner, would result in white LED with an integral filter used to light up an aircraft instrument panel.

Verney also fails to compensate for the deficiencies of the modified Lang device. In fact, Verney specifically teaches away from the present invention as set forth in claim 28 in that Verney discloses that red light is made compatible for use with NVG's by using a filter over the source of light and that the filter transmits about 80% or more of visible red light energy from about 360 nm to about 640 nm and inhibits the transmission of 99.9% of radiant energy within the goggle sensitive range about 720 nm.

Thus, claim 28 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu and/or Lambert and/or Verney. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) of claim 28 and dependent claims 29 and 45 should be withdrawn.

Patentability of claims 31-33 and 46

Claim 31, recites, *inter alia*:

> replacing each incandescent lamp with a plurality of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band,
>
> the plurality of white light-emitting diodes being configured not to disturb the light intensifier night vision imaging system when the plurality of white light-emitting diodes is not filtered in the red wavelengths.

For the reasons similar to those set forth above regarding claim 1, Lang modified by Jüstel or Shimizu (Schweber is not prior art) fails to disclose, teach or suggest replacing each incandescent lamp with a plurality of white light-emitting diodes that are not filtered in the red wavelengths and that emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and low residual energy in the red wavelengths band and that the plurality of white light-emitting diodes are configured not to disturb the light intensifier night vision imaging system when the plurality of white light-emitting diodes is not filtered in the red wavelengths.

Lang discloses a *filtered* lightbulb that is filtered in the red wavelengths (i.e., above 640 nm) wherein the filter is the glass bulb which is part of the lightbulb. The invention of Lang *was* making the filter integral with the bulb. Thus Lang does not disclose all of the claimed limitations of claim 31. Taken as a whole, Lang teaches making incandescent lamps or bulbs which have integral colored glass for filtering the light source in the red wavelengths and allowing light to pass in the green wavelengths in order be compatible with night vision equipment. This would lead one away from the present invention which includes light-emitting sources that are not filtered in the red wavelengths and which are chosen to emit polychromatic white light with high radiant energy in the violet/blue wavelengths band and with low residual energy in the red wavelengths band and which are configured not to disturb the light intensifier night vision imaging system when the white light-emitting source is not filtered in the red wavelengths.

As mentioned above, Schweber does not qualify as prior art. Jüstel and Shimizu each disclose white-light emitting diodes. However, neither Jüstel or Shimizu discloses, teaches or suggests using white light emitting diodes in combination with night vision goggles, so there would be no motivation to combine Jüstel or Shimizu with the lightbulbs of Lang as suggested by the Examiner. But, even if Lang were modified to include the white light emitting diodes of either Jüstel or Shimizu, the result would be a white light emitting diode encased in a colored glass envelope which filters light in the red wavelengths. Referring to the APPENDIX, the yellow portion, filament 26, would need to be replaced by the white LED of Shimizu, and the green portion, envelope 22, would remain such that the white LED would be filtered above 640 nm. Any other modification or combination would change the principle of operation of Lang wherein the main thrust of the invention is an integral sealed colored glass envelope that transmits light energy substantially only in the green spectrum. Thus, claim 31 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu.

Lambert fails to compensate for the deficiencies of the modified Lang device. Lambert discloses an apparatus for illuminating a portion of the cockpit of an aircraft utilizing a night vision imaging system having an LED that outputs a light color of green and specifically outputs a light frequency in the range of 562-567 nanometers so that the light will not "blow out

the goggles." (col. 3, lines 20-32). Accordingly, modifying the modified Lang device with Lambert, as suggested by the Examiner, would result in white LED with an integral filter used to light up an aircraft instrument panel.

Verney also fails to compensate for the deficiencies of the modified Lang device. In fact, Verney specifically teaches away from the present invention as set forth in claim 31 in that Verney discloses that red light is made compatible for use with NVG's by using a filter over the source of light and that the filter transmits about 80% or more of visible red light energy from about 360 nm to about 640 nm and inhibits the transmission of 99.9% of radiant energy within the goggle sensitive range about 720 nm.

Thus, claim 31 is not *prima facie* obvious in view of Lang modified by Jüstel or Shimizu and/or Lambert and/or Verney. Accordingly, it is respectfully requested that the rejection under 35 U.S.C. § 103(a) of claim 31 and dependent claims 32-33 and 46 should be withdrawn.

Claims 8, 22 and 30

Claims 8, 14, 22 and 30 have been canceled and accordingly, the rejection under 35 U.S.C. § 103(a) of claims 8, 14, 22 and 30 have has been effectively rendered moot.

CONCLUSION

In view of the foregoing Amendment and Remarks, it is respectfully submitted that the present application, including claims 1-7, 9-13, 15-21, 23-29, 31-51 and 53-54, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

JEAN-MARC WILHELM *et al.*

October 30, 2003 By: _____
(Date)

JOHN D. SIMMONS
Registration No. 52,225
AKIN GUMP STRAUSS HAUER & FELD LLP
One Commerce Square
2005 Market Street, Suite 2200
Philadelphia, PA 19103-7013
Telephone: 215-965-1200
Direct Dial: 215-965-1268
Facsimile: 215-965-1210
E-Mail: jsimmons@akingump.com

JDS/CAJ
Attachments – APPENDIX-i-ii

APPENDIX

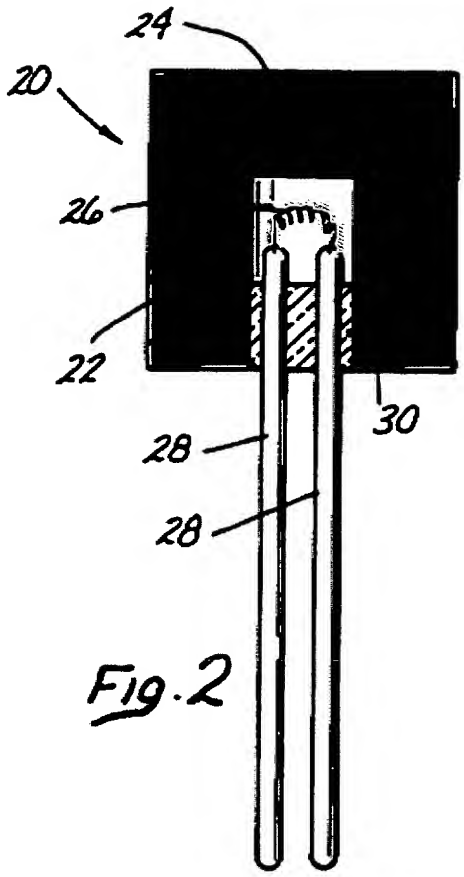

Fig. 2

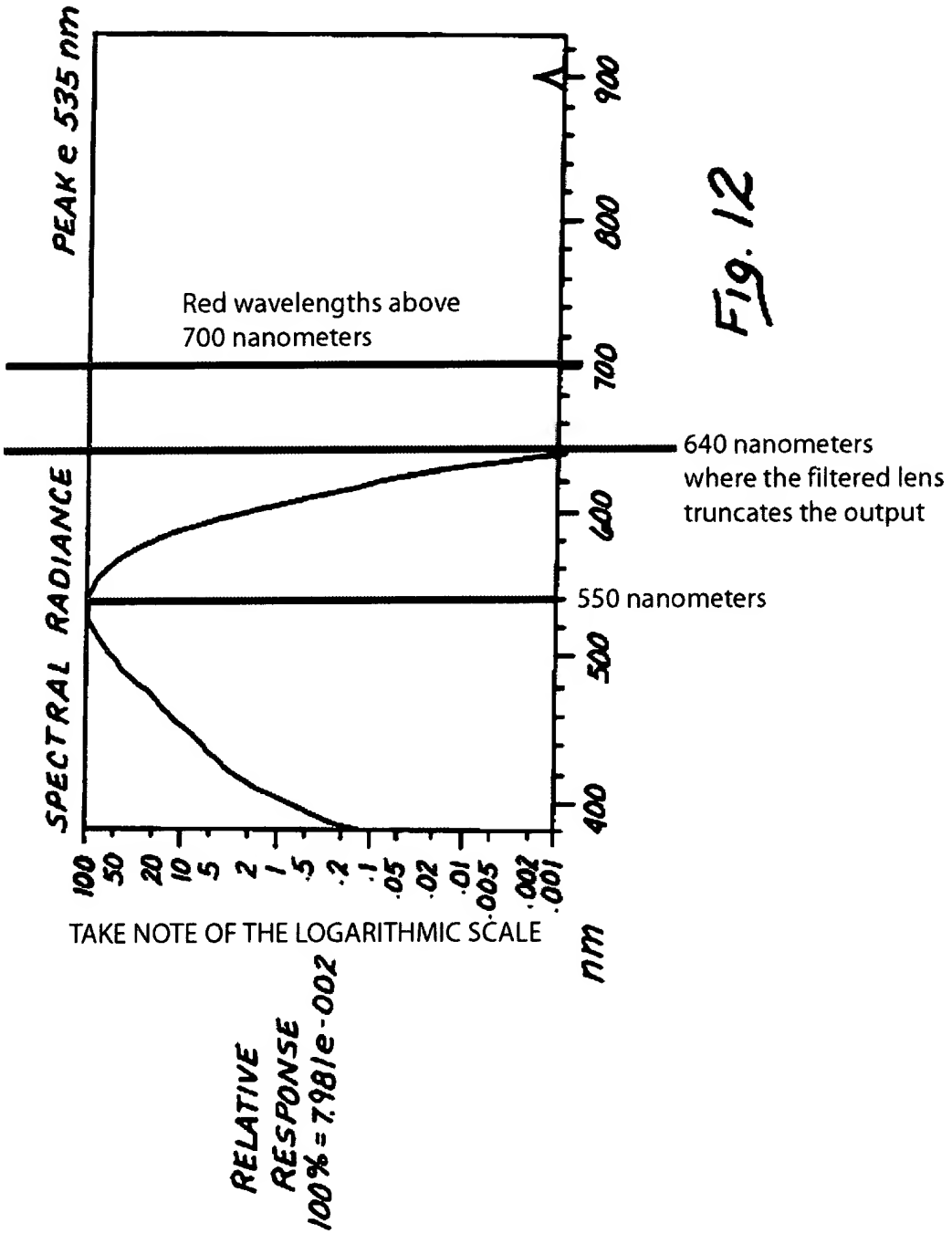
PEAK e 535 nm
Red wavelengths above
700 nanometers
640 nanometers
where the filtered lens
truncates the output
550 nanometers
SPECTRAL RADIANCE
100 50 20 10 5 2 1 .5 .2 .1 .05 .02 .01 .005 .002 .001
TAKE NOTE OF THE LOGARITHMIC SCALE
RELATIVE
RESPONSE
100% = 7.981e-002
900 800 700 600 500 400
nm

Fig. 12